

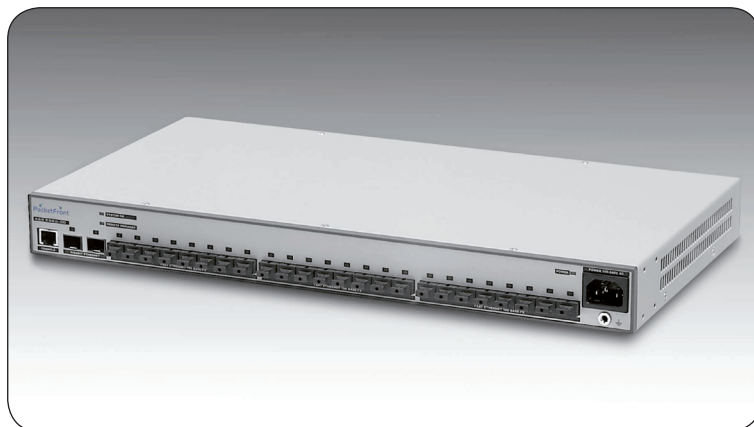
# ASR 5000-CO

Advanced Services Router – Central Office

## Delivering advanced triple-play services with full flexibility for future demands

### Key benefits:

- Purpose built for FTTH access
- NPU-based for full feature flexibility
- Eliminates doubtful predictions on future demands
- Avoids costly hardware upgrades
- Enables advanced service personalization and differentiation
- Cost-efficiently controlled from BECS™



ASR 5000-CO is PacketFront's high-performance broadband router optimized for FTTH access and cost-efficient broadband aggregation, delivering advanced triple-play services to countless end-users. Being the first broadband router for the access segment using sophisticated NPU-design (Networking Processor Unit), it features limitless opportunities for supporting any future developed functions, features or required standards with full performance. The flexibility in support for future demands allows what we call imagination-based networking, i.e. the "killer application" or required standard of tomorrow is easily provided through ASR 5000-CO software upgrades. This eliminates the need for costly hardware upgrades which have typically been a way of solving support of new developments or end-user demands.

### Full performance

The NPU-based design and wire speed throughput makes the ASR 5000-CO ideal for distributing virtually any bandwidth-heavy service now and in the future, including VPN services. Furthermore, thanks to advanced options for traffic shaping per ASR 5000-CO port, Internet services are easily differentiated and personalized to match different end-user demands.

### Future proof

Through its software-based architecture, the ASR 5000-CO is easily upgradeable and provides vast options for new and innovative services being developed.

### Policy enforcement point

The ASR 5000-CO transports all data traffic including Internet, IPTV, IP telephony, etc. The service policies defined in BECS are enforced in the network by the ASR 5000-CO and dynamically applied for all users connected. This includes everything from packet filters, bandwidth shaping and what range of IP-address to use. Acting as a client to BECS, it receives all communication over a dedicated connection avoiding network disturbances during peak hours.

### Open access per service

The ASR 5000-CO offers individual treatment per service, i.e. parameters like QoS, bandwidth, security and priority, are set per service. Through this granular control of services, different bandwidths can be given to the same device (MAC-address) on one interface of the ASR 5000-CO, which allows the allocation of different bandwidths to different members of the household on the same client (e.g. a PC). The ASR 5000-CO also shapes and polices bandwidth, which gives much better performance and accuracy than other means of bandwidth limitation.

### IP address management and security in open-access networks

Based on flexible IP address allocation and dynamic configuration, the ASR 5000-CO fully supports multiple service providers in a shared infrastructure. In cooperation with BECS, the ASR 5000-CO provides dynamic and static address allocation of private, public and service-provider specific IP addresses.

This allocation is also enforced and controlled in ASR 5000-CO such as multicast source filters and traceability functions, preventing ARP-spoofing and address conflicts. Such anti-spoof mechanisms also play an important role in the prevention and follow-up of hacking and abuse.

### Automated installation, configuration and upgrading

Being controlled from BECS, the ASR 5000-CO is automatically provisioned with the initial configuration profile and correct iBOS software version when deployed in the network. This is triggered upon connecting the ASR 5000-CO to the network and requires no manual or on-site configuration. Upgrading of iBOS software is also performed by means of automation.

### Automated service provisioning

Provisioning of services is automated in the ASR 5000-CO from BECS. Service profiles are sent to the ASR 5000-CO containing all necessary information required to deliver the services securely to the end-users' clients (set-top boxes, PCs or IP phones). Authentication and authorization of clients is automatically taken care of in BECS, resulting in a service-provisioning process that is performed without manual intervention, thus saving valuable resources.

# ASR 5000-CO

## Description

Model	Description	Wavelength (nm)	Max/Min output pwr (dBm)	Max/Min input pwr (dBm)
ASR 5124 AC-CO	24 10/100BaseTX, RJ45 ports	-	-	-
ASR 5124 DC-CO	24 10/100BaseTX, RJ45 ports	-	-	-
ASR 5624 AC-CO	24 100BaseFX, Single mode, single fiber, SC ports	1550/1310	-8/-15	-3/-31
ASR 5624 DC-CO	24 100BaseFX, Single mode, single fiber, SC ports	1550/1310	-8/-15	-3/-31
ASR 5724 AC-CO	24 100BaseFX, Single mode, dual fiber, LC ports	1310	0/-20	0/-28
ASR 5724 DC-CO	24 100BaseFX, Single mode, dual fiber, LC ports	1310	0/-20	0/-28

## Physical

### Ports:

- 1 RS-232 serial console interface
- 2 SFP-based Gigabit Ethernet 1000Base-X ports
- 24 downlink ports depending on model

### Dimension (H) (W) (D):

- 43x441x240mm, 1.69"x17.36"x9.45"

### Weight:

- 3 to 3,2kg, 6.61 to 7.05lbs, depending on model

### Indicators:

- 2 Gigabit Ethernet SFP based uplink interfaces, each with LED indicator
- 24 downlink interfaces, each with LED indicator
- System OK LED indicator
- Remote managed LED indicator
- 2 power status LED indicators

### Acoustic:

- Max 50dBA noise level

### Cooling:

- Redundant fans
- ASR 5100 has sufficient cooling capacity with one of two fans working
- ASR 5600 and ASR 5700 have sufficient cooling capacity with two of three fans working
- Replaceable fans

## Environmental

### Operating temperature:

- 0 to 40°C, 32 to 104°F

### Operating temperature with redundant fans:

- 0 to 45°C, 32 to 113°F

### Operating humidity:

- 10% to 90%, non condensing

### Storage temperature:

- -10 to 70°C, 14 to 158°F

### Storage humidity:

- 5% to 95%, non condensing

### Rack mounting:

- Standard 19" rack mountable

### Heat dissipation:

- See power consumption

## Power and safety

Power connector located in the front panel

Automatic restart of the system when any of the faults conditions are cleared

### AC model:

- Single power input 100-240V, 50-60 Hz, compliant with ETSI EN 300132 V2.1.1 Part1

### DC model:

- Redundant power input 48V, compliant with ETSI EN 300132 V2.1.1 Part2
- AC to DC PSU

### Power consumption:

- ASR 5124 AC-CO: 28W
- ASR 5124 DC-CO: 25W
- ASR 5624 AC-CO: 46W
- ASR 5624 DC-CO: 42W
- ASR 5724 AC-CO: 46W
- ASR 5724 DC-CO: 42W

## Regulatory compliance

CE and ETL-mark, IEC/EN/UL 60950, IEC/EN/UL 60825, CB-certificate, ETSI EN 300386, FCC Part 15 Subpart B, RoHS directive 2002/95/EC

## IP forwarding

### Interfaces:

- 1500 layer 3 interfaces

### Classification:

- Layer 2-4 packet classification with filtering
- Per-service packets and bytes accounting
- Access-list entry hit logging and packet counting

### Unicast:

- 5000 IPv4 routes
- Up to 4 paths using ECMP

### Multicast:

- 2048 S, G IPv4 multicast forwarding entries
- Per-port and per-vlan replication

## Quality of Service

### Packet queuing:

- Weighted round robin (WRR)
- Weighted fair queueing (WFQ)

### Policing:

- 4095 Single/Dual Token Bucket Policier, with packet drop or recolor (64kbps - 100Mbps)

### Shaping:

- 4095 Shapers with packet drop or recolor (64kbps - 100Mbps)

## Routing protocol support

### Unicast:

- OSPFv2

### Multicast:

- PIM-SM/SSM
- IGMPv2, v3

## Management

SNMPv1, v2 and v3

TELNET

Industry standard CLI

PFDP – PacketFront Device Protocol

NTP

SYSLOG

RS232 console serial port

DHCP

Realtime Protocol Monitoring MPEG-2

NetFlow v9

## Security

IP spoofing protection

Wirespeed IP fragment inspection

Per layer 3-interface packet shaper for packets destined to CPU

Restrictable multicast access

Interface mirroring to local or remote interface

UNI isolated ports

DHCP snooping

## Ethernet and Bridging

IEEE 802.3u – Fast Ethernet

IEEE 802.3z – Gigabit Ethernet

IEEE 802.1p and 802.1Q with full VLAN range

IEEE 802.1 D Spanning-tree

IEEE 802.1w Rapid spanning-tree

16384 MAC addresses

Per VLAN learning

## Virtual Private Networking

### IP tunnels:

- 500 tunnels
- Transparent ethernet bridging over L2TPv3
- Port forwarding over L2TPv3
- IP over GRE
- Ethernet over GRE
- Wirespeed IP reassembly and fragmentation